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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
CHERRY, STEPHEN J

ART UNIT	PAPER NUMBER
2863	

DATE MAILED: 06/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/024,462	PADMANABHAN ET AL.	
	Examiner	Art Unit	
	Stephen J. Cherry	2863	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 December 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☒ Claim(s) *23* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-8, 10, 13-14, 16 and 19-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Wyatt. The claims describe, as disclosed by Wyatt ('530).

1. A network for detecting biological agents, the network comprising:

a plurality of sensors for detecting agents in an area with a probability of accuracy ('530, fig. 4, 18);

a controller communicatively coupled to the sensors for receiving information from the sensors to utilizing an evidence accrual method to combine probabilities of detection provided by the sensors to determine whether such agents are a threat with a greater probability than any individual sensor ('530, 19, and col. 13, line 3).

2. The network of claim 1 wherein the sensors are selected from the group consisting of trigger sensors ('530, col. 14, line 10, and line 48, detection by a sensor triggers increased sampling by other sensors), Lidar, mass spectrometer, antibody, and PCR detectors.

3. The network of claim 1 wherein the controller comprises multiple controllers ('530, figure 4, 6).

4. The network of claim 3 wherein the controllers comprise multiple integrating controllers coupled to different sets of sensors, and an operating controller coupled to the integrating controllers ('530, col. 13, line 36).

5. The network of claim 4 wherein the number of integrating controllers is variable to cover and protect areas of diverse size ('530, col. 13, lines 46-60).

6. The network of claim 4 wherein a set of sensors coupled to one integrating controller at least partially overlaps a set of sensors coupled to another integrating controller to provide verification or fault tolerance ('530, figure 3 shows sensors covering an assigned area, and at col. 13, line 62, using a group of sensors to track a threat is disclosed).

7. The network of claim 1 wherein the sensors are selected from the group consisting of early warning, broadband and specific sensors ('530, col. 8, lines 29-45 describe sensors capable of detecting a broad range of aerosols).

8. The network of claim 1 wherein information from sensors not targeted for a specific threat is used to help identify such specific threat ('530, col. 113, line 61 discloses using meteorological data to assist in analysis of aerosol data).

10. A network for detecting biological agents, the network comprising:

a plurality of sensors for detecting agents in multiple areas with a probability of accuracy ('530, fig. 3);

a plurality of integrating controllers communicatively coupled to selected groups of sensors protecting each area for receiving information from the sensors to determine whether such agents are a threat to a respective area with a greater probability than any individual sensor ('530, 6); and an operating controller that receives information propagated to it from the integrating controllers and performs data fusion to determine a final decision for the entire area under protection wherein the operating controller comprises an evidence accrual method for performing the data fusion ('530, 19, and col. 13, line 36).

13. A network for detecting biological agents in a building, the network comprising: a plurality of different types of sensors for detecting biological agents in the building ('530, col. 13, line 23 and 61), wherein the sensors are placed at different locations within the building based on the characteristics of the sensor ('530, col. 13, line 26); a controller communicatively coupled to the sensors for receiving information from the sensors to determine whether an agent threat exists for the space ('530, fig. 4, 19).

14. The network of claim 13 wherein at least one sensor is monitoring threats external to the building ('530, fig. 3).

16. A method of detecting chemical and biological agent threats using a diverse network of sensors, the method comprising:

collecting information from sensors regarding the conditional probability of detection of biological agents ('530, fig. 4, and col. 14, line 49); combining the information from the sensors to increase the accuracy of the overall probability of the detection of a threat 530, fig. 4, and col. 13, line 36).

19. The method of claim 16 wherein the sensors are selected from the group consisting of early warning, broadband and specific sensors ('530, col. 8, lines 29-45 describe sensors capable of detecting a broad range of aerosols).

20. The method of claim 16 wherein information from sensors not targeted for a specific threat is used to help identify such specific threat ('530, col. 113, line 61 discloses using meteorological data to assist in analysis of aerosol data).

21. A method of designing a network for detecting threats from biological and chemical agents, the method comprising:

determining a probability of detection for multiple sensors for a given threat ('530, fig. 4, calculations performed by 5 and 6, col. 11, line 66 to col. 12, line 39); generating an algorithm for decision fusion for each of multiple local groups of sensors (col. 14, lines 3-11); and generating an algorithm for decision fusion for a combination of the multiple local groups of sensors ('530, col. 13, lines 49-55).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wyatt.

Claim 15, dependant upon claims 13 and 14, describes features disclosed by Wyatt:

> 13. A network for detecting biological agents in a building, the network comprising: a plurality of different types of sensors for detecting biological agents in the building ('530, col. 13, line 23 and 61), wherein the sensors are placed at different locations within the building based on the characteristics of the sensor ('530, col. 13, line 26); a controller communicatively coupled to the sensors for receiving information from the sensors to determine whether an agent threat exists for the space ('530, fig. 4, 19).
>
> 14. The network of claim 13 wherein at least one sensor is monitoring threats external to the building ('530, fig. 3).

Claim 15 further discloses features that are not explicitly disclosed by Wyatt, which Wyatt describes as prior art:

15. The network of claim 14 wherein the at least one sensors comprises a Lidar ('530, col. 2, line 24).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use Lidar sensors with the invention of Wyatt to allow the detection of the presence of aerosols from a distance to allow a deduction of the extinction coefficients of aerosol particles ('530, col. 2, line 59).

Claim 17, dependant upon claim 16, describes features disclosed by Wyatt:

16. A method of detecting chemical and biological agent threats using a diverse network of sensors, the method comprising:
collecting information from sensors regarding the conditional probability of detection of biological agents ('530, fig. 4, and col. 14, line 49); combining the information from the sensors to increase the accuracy of the overall probability of the detection of a threat 530, fig. 4, and col. 13, line 36).

Claim 17 further discloses features that are not explicitly disclosed by Wyatt, which Wyatt describes as prior art:

17. The method of claim 16 wherein the sensors are selected from the group consisting of FLAPS, Lidar ('530, col. 2, line 24) , mass spectrometer, antibody, and PCR detectors.

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use Lidar sensors with the invention of Wyatt to allow the

detection of the presence of aerosols from a distance to allow a deduction of the extinction coefficients of aerosol particles ('530, col. 2, line 59).

Claims 9, 11, 12, 18, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wyatt in view of US 2003/0065409 to Raeth et al.

Claim 9, dependant upon claim 1, describes features disclosed by Wyatt:

1. A network for detecting biological agents, the network comprising:

a plurality of sensors for detecting agents in an area with a probability of accuracy ('530, fig. 4, 18);

a controller communicatively coupled to the sensors for receiving information from the sensors to utilizing an evidence accrual method to combine probabilities of detection provided by the sensors to determine whether such agents are a threat with a greater probability than any individual sensor ('530, 19, and col. 13, line 3).

Claim 9 further discloses features not disclosed by Wyatt, which are disclosed by Raeth:

9. The network of claim 1 wherein the evidence accrual method comprises a Bayesian net ('409, paragraphs 338-340).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the invention of Wyatt with the Bayesian forecasting of Raeth to allow improved performance in the presence of noise ('409, paragraph 340).

Claim 11-12, dependant upon claim 10, describes features disclosed by Wyatt:

10. A network for detecting biological agents, the network comprising:

a plurality of sensors for detecting agents in multiple areas with a probability of accuracy ('530, fig. 3);

a plurality of integrating controllers communicatively coupled to selected groups of sensors protecting each area for receiving information from the sensors to determine whether such agents are a threat to a respective area with a greater probability than any individual sensor ('530, 6); and an operating controller that receives information propagated to it from the integrating controllers and performs data fusion to determine a final decision for the entire area under protection wherein the operating controller comprises an evidence accrual method for performing the data fusion ('530, 19, and col. 13, line 36).

Claim 11 further discloses features not disclosed by Wyatt, which are disclosed by Raeth:

11. The network of claim 10 wherein each integrating controller comprises a Bayesian net for determining whether such agents are a threat to the area it protects ('409, paragraphs 338-340).

12. The network of claim 10 wherein the evidence accrual method comprises a Bayesian net ('409, paragraphs 338-340).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the invention of Wyatt with the Bayesian forecasting of Raeth to allow improved performance in the presence of noise ('409, paragraph 340).

Claim 18, dependant upon claim 16, describes features disclosed by Wyatt:

> 16. A method of detecting chemical and biological agent threats using a diverse network of sensors, the method comprising:
> collecting information from sensors regarding the conditional probability of detection of biological agents ('530, fig. 4, and col. 14, line 49); combining the information from the sensors to increase the accuracy of the overall probability of the detection of a threat 530, fig. 4, and col. 13, line 36).

Claim 18 further discloses features not disclosed by Wyatt, which are disclosed by Raeth:

> 18. The method of claim 16 wherein the information from the sensors is combined utilizing a Bayesian net to combine conditional probabilities of detection provided by the sensors ('409, paragraphs 338-340).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the invention of Wyatt with the Bayesian forecasting of Raeth to allow improved performance in the presence of noise ('409, paragraph 340).

Claims 22, dependant upon claim 21, describes features disclosed by Wyatt:

> 21. A method of designing a network for detecting threats from biological and chemical agents, the method comprising:
>
> determining a probability of detection for multiple sensors for a given threat ('530, fig. 4, calculations performed by 5 and 6, col. 11, line 66 to col. 12, line 39); generating an algorithm for decision fusion for each of multiple local groups of sensors (col. 14, lines 3-11); and generating an algorithm for decision fusion for a combination of the multiple local groups of sensors ('530, col. 13, lines 49-55).

Claim 22 further discloses features not disclosed by Wyatt, which are disclosed by Raeth:

> 22. The method of claim 21, wherein the algorithm comprises a Bayesian net ('409, paragraphs 338-340).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the invention of Wyatt with the Bayesian forecasting of Raeth to allow improved performance in the presence of noise ('409, paragraph 340).

Allowable Subject Matter

Claim 23 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The claim 23 recites, "creating different combinations of local and combined groups of sensors; determining the performance of each of the different combinations; and selecting an optimal combination based on the performance of the different combinations". This feature in combination with the remaining claimed structure avoids the prior art of record.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen J. Cherry whose telephone number is (703) 305-0425. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (703) 308-3126. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0719.

SJC
June 22, 2003

John Barlow
Supervisory Patent Examiner
Technology Center 2800